Claims

We claim:

1	1. A polynucleotide molecule that comprises a nucleotide sequence encoding an
2	active toxin and a nucleotide sequence encoding a phage vector protein.
1	2. A nucleotide molecule of claim 1 wherein said toxin is derived from Bacillus
2	thuringiensis.
1	3. The polynucleotide molecule of claim 1 wherein said phage vector protein is
2	derived from a filamentous phage vector.
1 `	4. The polynucleotide molecule of claim 1 wherein said nucleotide sequence
2	encoding an active toxin and said nucleotide sequence encoding a phage vector protein are
3	expressed as a fusion protein such that a phage is formed having said active toxin displayed
4	on the surface thereof.
1	5. The polynucleotide molecule of claim 1 that encodes a fusion protein as shown
2	in Figure 1.
1	6. A polypeptide molecule comprising a phage region and a toxin region wherein
2	said polypeptide molecule is arranged to form a phage having said toxin region displayed on
3	the surface thereof.
1	7. The polypeptide molecule of claim 6 wherein said toxin region is derived from
2	Bacillus thuringiensis.

8. The polypeptide of claim 6 having an amino acid sequence as shown in Figure 1.

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1	9. A method of preparing active Bacillus thuringiensis toxins comprising
2	transforming one or more cells with a polynucleotide molecule that comprises a nucleotide
3	sequence which encodes for an active Bacillus thuringiensis toxin and a nucleotide sequence
4	which encodes for a phage vector protein; and
5	growing said one or more cells under conditions such that said polynucleotide
6	molecule is expressed, thereby forming a fusion protein having toxic activity.
1	10. The method of claim 9 wherein said phage vector protein is derived from a
2	filamentous phage vector.
1	11. The method of claim 9 wherein said polynucleotide molecule encodes a fusion
2	protein having an amino acid sequence as shown in Figure 1.
1	12. The method of claim 9 wherein said one or more cells are prokaryotes.
1	13. The method of claim 13 wherein said one or more cells are of a type selected
2	from the group consisting of E. coli strain JM109, E. coli strain JM101, E. coli K12 strain
3	294, E. coli strain W 3110, E. coli X1776, E. coli XL-1Blue and E. coli B.
1	14. The method of claim 13 wherein said one or more cells are E. coli strain JM109.
1	15. A method of screening for novel Bt toxins comprising obtaining a phage display
2	library comprising a plurality of recombinant phage having a toxin displayed on the surface
3	thereof; and
4	screening said library to identify a phage clone comprising phage which bind to a
5	toxin specific target.
1	16. The method of claim 15 further comprising isolating from said phage which bind
2	to a toxin-specific target a polynucleotide molecule having a nucleotide sequence that
3	encodes a toxin.

- 1 17. A phage clone comprising phage that comprise a polynucleotide molecule having 2 a nucleotide sequence that encodes a toxin, wherein said phage have said toxin displayed on 3 the surface thereof.
 - 18. An isolated polynucleotide molecule produced by the method of claim 16.
- 1 19. One or more plant cells transformed with a polynucleotide molecule produced by the method of claim 16.

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